

# Astro computer systems

# Outline

- This talk assumes you can already...
  - log on
  - change passwords
  - use email
  - use internet browsers
- We will cover
  - what machines are where
  - disk space/quotas/scratch policy (do we have one?)
  - use of tapes (types of tape, tar, dump)
  - good backup practice
  - printers
  - starlink software collection
  - moving data around (FTP, scp)
  - interaction between Linux and Windoze PCs
  - external access to Astro systems
  - security
  - the 'cluster'
  - who to tell when things don't work
- and finally a general Q&A session.

# What machines are where...

- There are several distinct sets of machines
  - ‘astro’ systems (called astroX and sousunX names)
  - ‘integral’ systems (with ‘Simpsons’ names)
  - the CPU cluster (astrocl1...astrocl4)
- There is a mixture of Solaris, Linux and Windows operating systems in use.
  - Solaris : sousun, sousun2, sousun3, sousun6, sousun13, sousun15, sousun8
  - Linux (RH8, RH9, RHe) : astroX machines
  - Windows XP: library PC
- Generally people work on their own desktop machines, using software/data stored on central servers.
  - Library PC is ‘shared’ by everyone
- The servers and the CPU cluster are in the computer room (along with printers, tape drives etc)
- The Integral machines are mainly used for heavy number crunching
  - monte-carlo simulations
  - INTEGRAL data analysis
- The sousun/astro/astrocl and Integral machines use different accounts (and passwords)

# Disk space

- You have a home area (/home/myusername) allocation
  - About 130Mb of space each (quota'd)
  - This area is backed up daily
- Scratch disks
  - /disks/scratch/scratchX (X is 2,3,6,13,15)
  - Designed for temporary storage
  - These are not backed up!
- Research group disks
  - /disks/bex/bex1
  - /disks/jets/radio
  - /disks/xray
  - your supervisor controls disk space (if you need more!)
  - these areas are not all backed up, so you may be responsible for making your own backups
- CPU cluster (astrocl1... astrocl4) disks
  - /disks/cluster
- Raid arrays
  - /disks/raid/raid1 (currently used by Carolyn)
  - /disks/raid/raid2 (INTEGRAL data archive)
  - /disks/raid/raid3 (don't use this directly, but use links /disks/xray/raid)
  - secure storage (allegedly)

# Tapes

- We have DAT and DLT tape drives
- DLTs are faster, higher capacity, and more robust. Tapes are about £45 each.
  - mainly used for backups
- DATs are slower
  - most observatories distribute data on DATs
- All are physically located on sousun, so it's easiest to log on to sousun and remotely access disks from there.

– /dev/rmt/0	DAT (DDS4)	20/40Gb capacity
– /dev/rmt/1	DAT (DDS3)	12/24Gb capacity
– /dev/rmt/2	DLT8000	40/80Gb capacity
– /dev/rmt/3	DLT4000	20/40Gb capacity
- Second capacity is for compressed use. Refer to the device as (for example) /dev/rmt/2c to force compression (or use the buttons on the tape drive itself)
- Use the 'tar' (tape archive) command under Unix to make backups.
  - critical switches are c = create, t = view contents, x = extract contents, but see man pages
  - backup from . to allow backups to be restored anywhere
- DVD +R/RW available on Windows PC and some newer astroX systems
  - DVD readers and CD-RW on many systems

# Printers

- **lpstar**
  - system default printer
  - fast mono laser printer with A3 capability
  - duplex
  - for general use
  - in the astro computer room
- **astrocolour (only from Linux)**
  - colour inkjet
  - slow and expensive
  - use only for high quality work
  - in the astro computer room
- **commono**
  - laser printer
  - Level 5 communications room
  - duplex
- **comcolour**
  - colour laser
  - Level 5 communications room
  - duplex
- names are the same from solaris and linux
- Useful printer commands:
- General printing (to default printer)
  - `lp (solaris) ... print something`
  - `lpr (linux) ... print something`
- Printing to a specific printer
  - `lpr -Pastrocolour X.ps`
- Printing on a specific paper/OHPs
  - `lpr -Pcomcolour-oht X.ps`
- Checking print queues
  - `lpq`
  - `lpq -Pastrocolour`
- Deleting print jobs
  - `lprm`
  - `lprm - ... deletes all your jobs`

# Available software

- Starlink software
  - GAIA
  - SPLAT
  - CURSA
  - CCDPACK
- HEASARC software
  - XSPEC
  - XRONOS
  - XANADU
  - FTOOLS
- IRAF (general analysis)
- CIAO (Chandra analysis)
- MIDAS (ESO and general analysis)
- MIRIAD (Radio data analysis)
- MOLLY & PAMELA
- XMMSAS (XMM analysis)
- AIPS (Radio data analysis)
  - only on specific machines
- OSA (Integral analysis)
  - only on Integral machines
- Latex
- SM (super Mongo)
- Programming
  - C, Fortran (intel and gnu)
  - IDL

# Moving data

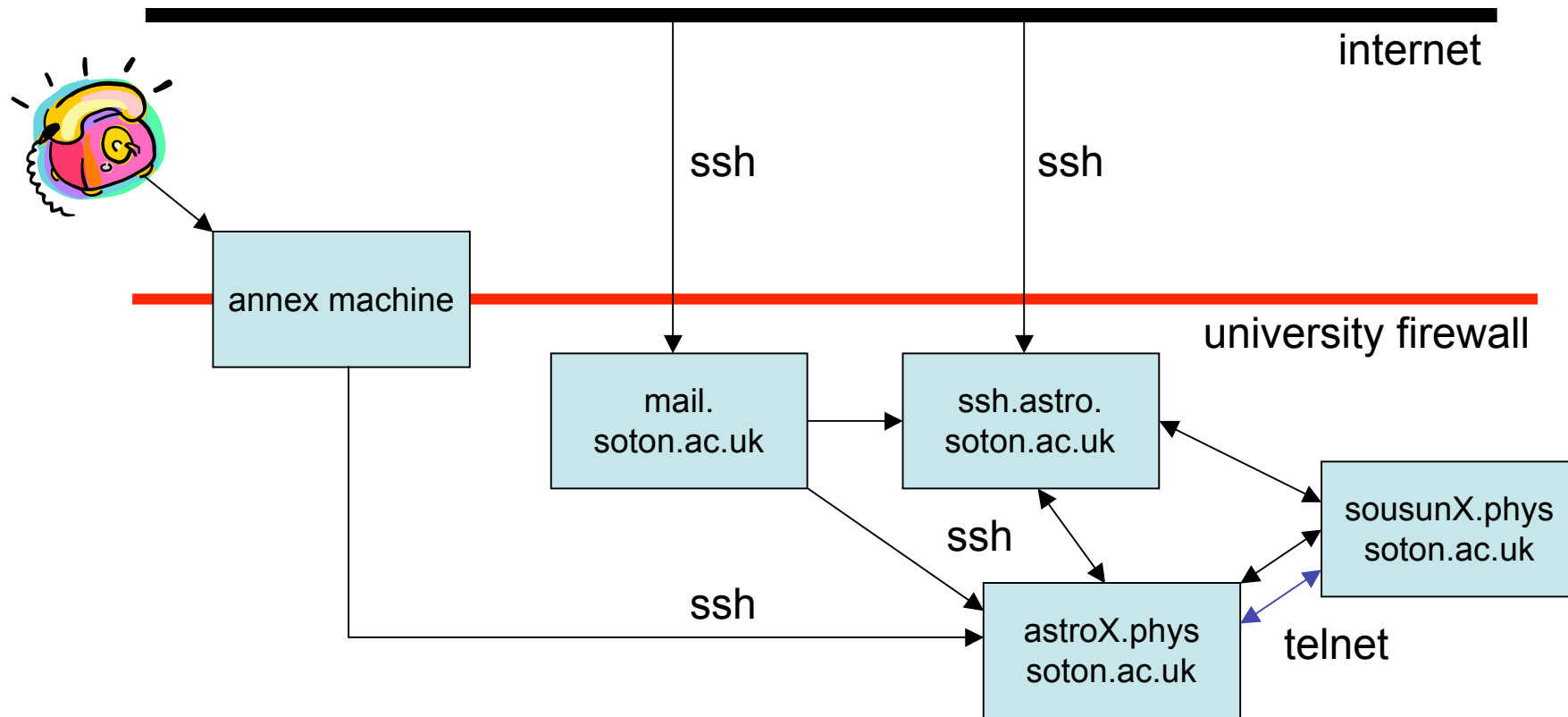
- Internally
  - use the cp (copy) or mv (move) command
  - can also do recursive copies (be careful !!!) with cp -r
  - mv is always recursive (i.e any subdirectories move as well)
- Externally
  - use ftp to access data on remote sites
  - ftp is not secure
  - scp (secure copy) is a better choice, but you need to have an account on the remote site
- You can speed things up by making a tar archive, making a single, large compressed file to move:
  - tar cvfz MYARCHIVE.tar.gz \*
  - archives and compresses all files in this and all subdirectories into MYARCHIVE.tar.gz

# Solaris, Linux and Windows

- Most disks are visible from solaris and linux machines with the same names
  - /disks/ may be restricted from desktops
- Unix disks can be seen from the Windows machine in the library
  - home and data disks should be visible
  - This uses SAMBA (in case you need to read the manual)
  - Watch out – Windows has a habit of remembering passwords!
- /disks/raid2 is a bridge between the INTEGRAL and Astro systems as it can be seen from both
- Some users may have VMWARE, which allows Windows to run in a window within Linux (so you get both running simultaneously).

# External access

- By ssh (secure shell) to ssh.astro.soton.ac.uk (152.78.195.222)
- Indirectly via mail.soton.ac.uk and then ssh to local systems
- By dialup via the 'annex' machine



# Security

- Your computer will be working in a hostile environment!
- System administrators will work hard to keep things secure on the main systems, but help them by:
  - Not installing untested software
  - Report any suspicious processes running
  - Make sure Windows virus checkers are running and up to date (VMWARE users!)
- On your own (windows) computers
  - Upgrade to Windows XP SP2 if possible, and use the windows update facility
  - Use a firewall – don't just rely on the university one
  - Install a virus checker and keep it updated
  - Don't run P2P software – ISS are watching
  - Don't run servers (web, FTP etc) – this also irritates ISS

# Miscellaneous

- University software licences for Microsoft products (and Sophos)
  - [www.software.soton.ac.uk](http://www.software.soton.ac.uk)
- Wireless network
  - ISS network covers areas around lecture theatres
  - register with ISS to access it
- The astro cluster
  - 4 dual CPU systems
    - each has 2 x 2GHz processors
    - each has 3Gb RAM
  - use the Grid system for job queuing
  - ask Simon for a tutorial when you need to use them

# When things go wrong...

- Check the documentation !
  - man pages under Unix
    - 'man tar' for info on tar
    - man -k archive to search all man pages for info on archiving
  - info under Linux (e.g. info tar will tell you all about tar)
  - findme and showme for Starlink software
- Simon Harris can help with most astro system problems and Starlink questions
- Mike Hill is the system administrator for the astro systems
- Tony Bird is the system administrator for the INTEGRAL systems.